Deciphering the Cellular Effects and Bioavailability of Moringa oleifera Leaf Extract

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Currently, growing interest has emerged on the beneficial effects of plant-based diets for the prevention of chronic diseases. Studies have shown that polyphenol compounds possess preventive health properties. Recently, supplementing moringa leaf extract powder in diet has become very popular for maintenance of general health. Moringa leaves are polyphenol rich, and has quercetin and kaempferol flavonoids. The purpose of this project is to establish evidence for the beneficial cellular effects and bioavailability of the commercially available Moringa leaf powder. Hence, I hypothesized that if commercially available moringa leaf powder is used as nutritional dietary supplement, then it can provide significant antioxidant, and anti-microbial support with good bioavailability. Planet Source Moringa Leaf powder supplement was used. Antioxidant activity was done by DPPH assay , anti-microbial activity was studied by measuring the inhibition of the growth of bacterial colonies, and bioavailability was measured by Folin's ciocalteau assay. Quercetin, a well-known plant polyphenol antioxidant was used as positive control. Moringa leaf extract exhibited robust antioxidant activity that was comparable to quercetin. A significant and robust anti-microbial activity was observed in agar plates coated with moringa extract with 89% of microbial inhibition. Bioavailability of polyphenols measured after mixing the extract in simulated gastric fluid (SGF) followed by simulated intestinal fluid (SIF) demonstrated that moring leaf extract had better bioavailability (81.5%) as compared with quercetin (79.1%). In conclusion, aqueous extract from moringa leaf supplement powder demonstrated a significant and potent antioxidant and anti-microbial activity with better bioavailabilty.